Remarks / Arguments

Status of the Claims

Claims 1-20 were pending in the application. After the entry of the amendments herein, claims 1, 2-5, 8, 11-17, 19-24, 27, 30-35, and 37-55 are pending. Claims 1, 2, 4-5, 8, 11-17, 19-24, 27, 30-35 and 37 have been amended by the present amendment. Claims 38-55 have been added. Claims 6, 7, 9, 10, 18, 25, 26, 28, 29, and 36 have been cancelled.

Upon entry of this Amendment and Response, there will be a total of 45 pending claims, with two independent claims, claims 1 and 20. Applicant originally filed and paid for 37 total claims, with 2 independent claims, and therefore the additional fee is enclosed.

Summary of Support For Claim Amendments

Support for amended claims 1 and 20 can be found in the specification at least at page 16 line 18 and page 17 line 8. Support for amended claims 8 and 27 can be found at least at page 17 line 8. Support for amended claims 11 and 30 can be found at least at page 11 line 26. Support for amended claims 12 and 31 can be found at least at page 17 line 1. Support for amended claims 15 and 34 can be found at least at page 17 line 1 and page 18 line 26. Support for amended claims 17 and 25 can be fount at least at page 14 line 28. Support for amended claims 19 and 37 can be found at least at page 17 line 10. Additional support for the claim amendments can be found in the claims as originally filed. Support for new claims 38 and 47 can be found at least at page 15 line 11. Support for new claims 39, 40, 48, and 49 can be found at least at originally filed claim 9. Support for new claims 41, 42, 50 and 51 can be found at least at page 19 line 7. Support for new claims 43 and 52 can be found at least at originally filed claims 7 and 18. Support for new claims 44 and 53 can be found at least at page 15 line 18. Support for new claims 45 and 54 can be found at least at page 18 line 9. Support for new claims 46

and 55 can be found at least at originally filed claim 16. The remainder of the claim amendments were made to better clarify the invention. No new matter has been added.

Claim Rejections

Claims 1-6 and 20-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,282,549 ("Hoeffert") in view of U.S. Patent No. 5,729,741 ("Liaguno"). Claims 7-10, 12-19, 26-29, and 31-37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoeffert in view of Liaguno and further in view of U.S. Patent No. 5,655,117 ("Goldberg"). Claims 11 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoeffert in view of Liaguno, further in view of Goldberg and further in view of U.S. Patent No. 6,026,411 ("Delp").

Cited References

Hoeffert

Hoeffert is directed to a method and apparatus for "searching the Internet" and for providing "analysis of the content of files found in the search" (col. 2, lines 22-25). Hoeffert describes "scan[ing] the media description file in each directory at a web site, and add[ing] the text based information stored there into the index being created by the crawler." (col. 3, line 66 through col. 4 line 2). Examples of the text used to index the media file includes the URL, text strings, titles, keywords, and annotations. (see col. 6 lines 15-32). Hoeffert also describes "searching based on information signals stored inside the content" (col. 8 lines 39-40). Such indices can include "a motion metric and brightness, contrast and color estimate." (col. 8 lines 42-43).

Liaguno

Liaguno is directed to a system for storage and retrieval of information from a computer employing a "user-defined storage index and a supplemental text description-based format" (col. 2, lines 37-38). Liaguno describes creating a user-created searchable index in connection with importing media images into a computer system via a keyword or profile index for the associated coupled media and text files (see abstract; col. 4, lines 38-54). The user may then use a text file to identify a media image, "all media inputs into the system...are processed to create a 'text' file for that media image, so that a free text search operator may be employed to locate a media image file, and thereby access the index file with which the text file is associated" (col. 8, lines 44-49). In the disclosed system, "all media inputs to the system are processed by means of a text-generator in order to create a 'text' file for that media image" (col. 3, lines 32-34). For non-text media, various other methods are used to "create a text file for that image so that a free text search operator may be employed to locate a media image file." (col. 8, lines 46-50). For example, audio files may be processed using a "commercially available voice recognition-to-text translation routine" (col. 9 32-53), whereas text in photographs "can be detected by processing the image through a character recognition routine." (col. 10, lines 10-11). However, "[i]f the original image contains no text of any kind, then the text image will also contain not text, and will be identified as being 'blank text'." (col. 10, lines 42-44).

Goldberg

Goldberg is directed to a system and method for indexing a multimedia data stream (See Abstract). To create the index filed described by Goldberg, the user "identifies [an] object either by drawing a region around the desired object or by using more sophisticated image processing techniques to differentiate the pixels of a particular object from the pixels of other objects or the background image." (col. 4, lines 15-19). Once the object is identified, "a set of information pertaining to the object" is created which "provides a means for inputting additional information which further describes the target." (col. 4 lines 20-24). In summary, the system and method described my Goldberg

allows a user to manually select an object in a video frame, and "perfor[ming] video indexing" by entering relevant information that can subsequently be searched. (col. 4, line 29).

Delp

Delp is directed to methods and systems for "building an image index and for querying by image colors images from the internet" (col. 1, lines 45-47). Delp describes creating an index file by "extrac[ing] color information from several levels within an image and mak[ing] it available for searching." (col. 4, lines 27-28). In one embodiment where "efficiency is not a concern," (col. 3 line 34) Delp describes a creating a histogram to "select the most popular samples" (col. 3 line 36) by "generat[ing] a variable size for the histogram bins depending on precision desired" (col. 5 lines 30-32) and determining the most popular colors based on the number of pixels that fall into each bin. (FIG. 5). The resulting color samples are then used to create an index for the image. (col. 3 lines 40-41).

Independent Claims 1 and 20

Claims 1-6 and 20-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoeffert in view of Liaguno.

Neither Hoeffert nor Liaguno, either alone or in combination, teach or suggest generating a data string for use in indexing a media element in response to relationships among a subset of components within a media file. With regard to media files generally, Hoeffert teaches creating a "media index [that] is generated by storing . . . information in an index format." (col. 7 lines 20-21). The information used to create the media index includes "relevant lexical information" such as:

(a) "the name of the media file
(b) URL of the media file
(c) text string which is associated with the media file anchor reference
(d) title of the HTML document containing the media file
(e) keywords associated with the HTML document
(f) URL for the HTML document containing the media file reference

(g) keywords embedded in the media file
(h) textual annotations in the media file
(i) script dialogue, closed captioning and lyric data in the media file
(j) auxiliary data in the media file (copyright, author, producer, etc.)
(k) auxiliary data located within the media reference in the HTML document and
(l) auxiliary data located in an associated media description file"

(col. 6 lines 14-32). The textural information is then used to create a "stored a media description file...[containing] a series of records of textual information for each media file within the current directory" (col. 3, lines 60-65). For example, the method taught by Hoeffert relies on author-supplied textual information such as HTML tags, surrounding text, or a URL (see col. 4, lines 24-45).

Hoeffert also describes a "scheme for determining the average frame difference for a pixel in a sequence of video" (col. 9, lines 37-39). To make such a determination, Hoeffert describes using attributes of a video file "to determine if a given video file contains low, medium, or high amounts of motion" by calculating "a singled valued scalar" referred to as a "motion metric" (col. 9, lines 25-29). The motion metric, as described by Hoeffert, represents the "visual change activity" (col. 10 line 7) and is calculated by sampling some number of video frames and computing the differences in RGB values between each pixel for each frame. (See col. 10, lines 23-43). Similar methods are described with reference to motion vectors. (See col. 12, lines 1-18). However, Hoeffert does not teach or suggest determining a component value, selecting a subset of components have a substantially similar value, and using the relationships among the subset of components to create a data string for use in indexing a media element, as recited and amended in Applicant's independent claims 1 and 20. In contrast, Hoeffert analyses differences between the same pixel from one frame to another to determine the degree of change in that pixel.

Liaguno does not cure the deficiencies of Hoeffert. As described above, Liaguno uses various forms of text recognition to build text-based index files for media elements, but does not select a subset of components of the media file based on a component value

and use the relationships among the components to create a data string for indexing the media element.

Accordingly, Applicant respectfully submits that independent claims 1 and 20 are patentable over Hoeffert, either alone or in combination with Liaguno. Applicant further submits that claims 2-5, 8, 11-17, 19, 21-24, 27, 30-35, and 37-55, which depend from independent claims 1 and 20 respectively, incorporate all of the limitations therein, and therefore are also patentable over each of the cited references, either alone or in combination. Applicants respectfully request reconsideration and withdrawal of the rejections of claims 1-5, 8, 11-17, 19-24, 27, 30-35, and 37-55.

Claims 7-10 and 12-19

Claims 7-10 and 12-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoeffert in view of Liaguno and further in view of Goldberg. Claims 7, 9, 10, and 18 have been cancelled by this Amendment and Response, and renders the rejections of those claims moot.

Applicant believes Goldberg teaches a method of manually selecting and indexing media elements throughout a video stream, and therefore Applicants respectfully suggest that Goldberg does not cure the deficiency of Hoeffert in view of Liaguno with respect to claims 8, 12-17, and 19.

Goldberg describes a user selection process whereby a user identifies a portion of a media element (e.g., by drawing a box around the portion of the image that is of interest to the user) and subsequently allows the user to create an index for the image. Goldberg does not teach or suggest using the attributes of a media element (e.g., component values) to create a data string to be used for indexing the element. In contrast, Applicant's method discloses determining a subset of components within a media element that share a common pixel value and using the relationships among the subset of pixels to create a data string. Therefore, Applicant's invention is patentable over Hoeffert in view of Liaguno, further in view of Goldberg.

Applicants respectfully submit that even if the references provided motivation for their combination, which they do not, claims 7-10 and 12-19 11 are patentable over Hoeffert, alone or in combination with Liaguno, and Goldberg, and request reconsideration and withdrawal of the rejection of claims 8, 12-17, and 19 under 35 U.S.C. §103(a).

Claims 11 and 30

Claims 11 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoeffert in view of Liaguno, further in view of Goldberg, and further in view of Delp. Generally, Applicant believes that Delp teaches comparing an index file generated based on the distribution of color within the image to an inventory of images or indices.

Applicant respectfully submits that Delp does not cure the deficiencies of Hoeffert, Liaguno and Goldberg. Delp does not teach or suggest determining a component value, selecting a subset of components have a substantially similar value, and using the relationships among the subset of components to create a data string for use in indexing a media element, as recited in Applicant's amended independent claims 1 and 20 from which claims 11 and 30 depend, respectively. Nor does Delp teach or suggest generating a histogram band for each of a plurality of component values for the subset of components, as recited in Applicant's new claims 38 and 47, from which claims 11 and 30 depend.

Applicants respectfully submit that even if the references provided motivation for their combination, which they do not, claims 11 and 30 are patentable over Hoeffert, Liaguno, Goldberg, and Delp, either alone or in combination, and request reconsideration and withdrawal of the rejection of claims 11 and 30 under 35 U.S.C. §103(a).

Conclusion

Applicant respectfully submits that Hoeffert, Liaguno, Goldberg, and Delp, either alone or in any combination, fail to teach each and every element of Applicant's independent claims 1 or 20, and those claims that depend directly or indirectly from those independent claims.

Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of all pending claims in due course. The Examiner is invited to contact Applicant's undersigned representative by telephone at the number listed below to discuss any outstanding issues.

Respectfully submitted,

Thomas A. Turano
Attorney for Applicant
Reg. No. 35,722

Date: January 10, 2005
Testa, Hurwitz & Thibeault, LLP
High Street Tower
125 High Street
Boston, MA 02110
(617) 248-7738

3149567